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Key Words

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Since 1968, when the first formal presentation of malignant lymphoma occurring in renal allograft recipients was made, much knowledge and data have been obtained on the topic of *de novo* malignancies after transplantation. The frequency of malignancies after renal transplantation (RTx) is reported to be 6% in the USA, 1-9% in Europe and 18.3% in Australia.¹ The 2 most frequent cancers after renal transplantation (RTx) reported in Western literature are lymphoma and skin cancers. Renal transplant recipients developing transitional cell carcinoma (TCC) were identified and presented the distinctly high percentage (43.6%) of TCC that were malignancies after RTx in Taiwan.² Herein, we present a male patient with multifoci TCC in the urologic tract and incidental detection of prostate adenocarcinoma. To our knowledge, we report the first case of urinary exenteration and ileal conduit urinary diversion in a male patient with multifocal urothelial carcinoma after renal transplantation.

Case Report

Urinary Exenteration on a Renal Transplant Recipient with Multifocal Urothelial Cancers and Prostatic Adenocarcinoma

The two cancers after renal transplantation (RTx) are transitional cell carcinoma (TCC) and hepatoma reported in Taiwan most frequently, *versus* lymphoproliferative diseases and skin cancers in the Western literature. Herein, we present a 49-year-old man with spinal cord injury and end-stage renal disease who developed multifocal TCC in the urologic tract and incidental detection of prostatic adenocarcinoma 15 months after a cadaveric RTx. *En bloc* complete native urinary tract excision and ileal conduit urinary diversion were performed smoothly. After 2-year follow up, there was no evidence of tumor recurrence, and graft function remained stable, with minimal hydronephrosis. Transplant physicians should carefully monitor any signs of urinary cancers, especially in renal transplant recipients with history of analgesics. Also, aggressive surgical treatment is recommended for these patients to prolong survival.

CASE REPORT

A 49-year-old man received a cadaveric kidney transplantation in Mainland China in December 1999 after hemodialysis for 8 months. He also was a victim of traumatic T10 spinal cord injury complicated with paraplegia and neurogenic bladder. Due to the persistent lower back pain, he took sulindac 100 mg tid for 20 years. After renal transplantation, he regularly received immunosuppressive therapy, including cyclosporin A 100 mg bid, prednisolone 5 mg qd and mycophenolate mofetil 250 mg bid. He also needed intermittent catheterization of the spastic bladder to relieve the high intravesical pressure to prevent hydronephrosis of renal allograft. He presented with gross hematuria and frequent urinary tract infections for 3 months. Cystoscopic examination revealed multiple foci of papillary transitional cell carcinoma in the urinary bladder. Native retrograde pyelography failed because of severe trabeculation of the urinary bladder and failure to identify ureteral ori-

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Fig. 1. Whole resected specimen including bilateral native kidneys, bladder and prostate. Thick wall of bladder is compatible of neurogenic bladder.

fices. The patient had undergone transurethral resection of bladder tumors. T1G3 TCC of the bladder was diagnosed. Given the history of analgesic nephropathy and end-stage bladder disease complicating malignancy, the patient agreed to receive bilateral nephroureterectomy and cystoprostatectomy.

In April 2001, through a midline abdominal incision, *en bloc* resection of bilateral native kidneys, ureters, bladder and prostate was performed (Fig. 1). An ileal conduit was constructed to drain the renal allograft. Surprisingly, the pathology revealed T1G2 TCC in the left uretero-pelvic junction and bladder, extensive carcinoma *in situ* in the right ureter and small foci adenocarcinoma in the prostate (Gleason's score: 2 + 2 = 4). Convalescence was uneventful, and the patient was discharged home on day 14 with regular immunosuppression. After 2 year of follow-up, there was no evidence of tumor recurrence. The graft function remained stable, with minimal hydronephrosis.

DISCUSSION

Besides the problems of infection and rejection, pa-

tients who undergo RTx and subsequent immunosuppressive therapy are at increased risk of developing cancers as a complication of long-term graft survival.³ Many mechanisms have been speculated to explain the high incidence of post-transplant neoplasm. Impairment of immune surveillance, susceptibility to oncogenic virus, uremia *per se*, and lymphoproliferation as a defective feedback mechanism were proposed in the literature. It is interesting to recall that at least 3 diseases characterized by renal fibrosis are risk factors of urothelial cancers, i.e., analgesic nephropathy, Balkan nephropathy and Chinese herbs nephropathy.⁴⁻⁶ Renal transplant recipients as a result of analgesic nephropathy are at high risk of developing TCC of the upper urinary tracts, with an incidence of up to 15%. Prophylactic bilateral nephroureterectomy is recommended for patients with kidney transplantation due to analgesic nephropathy.⁷

Radical surgery is the treatment of choice for cancers. Survival in this kind of recipients depends on the level of tumor invasion, the perioperative period of surgical complications, sepsis or disseminated disease. Although TCC of bilateral native upper urinary tracts was not diagnosed preoperatively in our patient, he made the right decision to receive the total urinary tract exenteration under the consideration of validity of the neurogenic bladder complicating cancers and the prophylactic nephroureterectomy for analgesic nephropathy with potential risks of cancers. There also was a bonus in also removing the occult prostatic adenocarcinoma in this single setting of surgery, although prostatic adenocarcinoma has a low incidence in Taiwan. An orthotopic neobladder after bilateral nephroureterectomy and cystectomy is a surgically feasible way to cure multifocal TCC in patients after renal transplantation with a cancer-free urethra, possibly providing a continent situation and a higher quality of life.⁸ Our patient is paraplegic and his activity is limited in chairs, so the ileal conduit was chosen for allograft urine diversion. He is perfectly satisfied with his present quality of life.

In conclusion, patients must be monitored every 3 months after renal transplantation due to analgesic nephropathy with cystoscopy, retrograde pyelography, urine cytology and ultrasonography, especially when recipients present with gross hematuria. We agree with Glassman and Sklar⁹ that complete native genitourinary excision with ileal conduit diversion is a feasible procedure to cure

multifocal TCC after renal allograft transplantation.

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